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VERIFICATION OF TRANSLATION

I, Michael Wallace Richard Turner, Bachelor of Arts, Chartered Patent Attorney, European Patent Attorney, of 1 Horsefair Mews, Romsey, Hampshire SO51 8JG, England, do hereby declare that I am conversant with the English and German languages and that I am a competent translator thereof;

I verify that the attached English translation is a true and correct translation made by me of the attached specification in the German language of International Application PCT/EP03/05812;

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Wind power installation

The invention concerns a wind power installation. Such wind power installations have long been known. They usually consist of a number of components such as a pylon and a machine housing which is mounted thereon and which accommodates the rotor of the wind power installation and the generator connected thereto for producing energy. Whenever such wind power installations are located within air traffic zones, that is to say those regions which are directly in the relative proximity of airports, such wind power installations must be provided with certain signalling devices so that the attention of the air traffic is drawn to the existence of the wind power installation as a large structure, in good time.

Signalling devices can also be coats of paint on the rotor blades (in particular the tips thereof) of the wind power installation.

General guidelines for identifying obstacles to air travel are known from 'Nachrichten für Luftfahrer' ['News for Pilots'], Part I, NfL I 15/00, 27th January 2000.

The various flight lighting arrangements are also mentioned therein. Another flight lighting arrangement is known from DE-U-200 08 289.

The object of the invention is to eliminate the previous disadvantages of flight lighting arrangements.

That object is attained in a wind power installation having the features set forth in claim 1. Advantageous developments are described in the appendant claims.

In the wind power installation, provided below the flashing signalling device is a cover which prevents the flashing device from being visible in a given cone (viewed from the flight lighting arrangement) laterally of the wind power installation as seen from the ground. The cone is preferably of a width of at least 45°, but preferably 90 - 150° or thereabove to over 180° (horizontal). Such a cover admittedly prevents a view on to the flight lighting arrangement at an angle below the wind power installation, but

normal air traffic is still in a position to recognise the light of the flight lighting arrangement.

If in addition the cover is a mirrored surface and in particular also is of a parabolic configuration, that causes the flashing to appear in strengthened form and more easily visible to the air traffic.

The device according to the invention provides that the flight lighting arrangement is no longer experienced as being annoying even right in the region of residences and light pollution for the residential population is avoided.

Depending on the respective height of the flight lighting arrangement, an angle of 150° or more already means that, as viewed from the ground, the light of the flight lighting arrangement is no longer to be seen, at a distance of 0 to 2000 m, preferably only up to 1000 m. This means that in particular the light of the flight lighting arrangement is no longer experienced as being a burden in adjoining residential areas.

The invention is described in greater detail hereinafter by means of an embodiment.

In the drawing:

Figure 1 shows a plan view of a wind power installation according to the invention,

Figure 2 shows a side view of a wind power installation according to the invention, and

Figures 3a, b, c, d and e show various embodiments of a wind power installation according to the invention.

Figure 1 shows a plan view of a wind power installation 1 comprising a pylon and a machine housing 2 mounted thereon as well as the rotor 3 of the wind power installation and the machine housing casing (pod) 4. As can be seen in Figure 2 provided on the pod is a flight lighting arrangement 5 which is caused to flash from time to time or constantly by a suitable control (not shown). Provided below the flight lighting arrangement is a cover 6 which prevents the light of the flight lighting arrangement from being visible from the ground in a region laterally of the wind power installation. That region can be 2000 m or more laterally of the wind power

installation (depending on the respective location), in which respect it is usually sufficient if the range within which the light from the flight lighting arrangement is not to be seen is about 1000 m (from the ground) besides the wind power installation.

The shape of the covered surface can be predetermined by a corresponding shape of the cover or pod. If for example the cover comprises a large circular disc, then the light of the flight lighting arrangement is not visible in a conical region below the disc and, depending on the respective diameter of the disc, the covered area is larger (increase in the cone angle). If the flight lighting arrangement is in a parabolic cover (Figure 3a) or box-shaped cover (3c), the angle covered can be up to 180° (with respect to the cone), that is to say in that case light from the flight lighting arrangement is practically no longer visible below the horizontal, with respect to the flight lighting arrangement. Such a large angle however is usually scarcely necessary as the wind power installations in any case are often located at relatively high, that is to say exposed positions, and the buildings therearound are markedly below the height of the flight lighting arrangement of the wind power installation.

If therefore the cover angle is about 160 to 170° (with respect to the cone), then the light of the flight lighting arrangement is no longer visible in a region of about 500 - 2000 m laterally of the wind power installation, but at the same time the light from the flight lighting arrangement is readily visible for all the flight traffic, as hitherto.

In principle it is also possible for the cover of the flight lighting arrangement to be such that it is always only the same region in a given lateral region of the wind power installation that is covered. If that cover is stationary or can be adjusted by motor means (upon rotation of the pod about the point of rotation), therefore it is always only the same region laterally of the wind power installation that is covered, independently of the azimuth angle of the wind power installation. As Figures 3a - 3d show, various variations in respect of the cover can be envisaged. In that respect it is the position of the outer edge 7 of the cover 8 that is the determining aspect for coverage.

The higher that outer edge is taken, the correspondingly greater is the cover angle and the correspondingly greater also is the distance from the wind power installation, within which the light from the flight lighting arrangement is no longer visible.

As the disturbing influence of the light from the flight lighting arrangement however decreases with the distance in relation to the wind power installation, it would usually be sufficient if the cover provides a 'shadow range' which is 1500 to 3000 m or markedly less.